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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/631,251	08/02/2000	Donald L. Wurch	22171.201(10740RRUS02U)	8412

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EXAMINER	
BARQADLE, YASIN M	

ART UNIT	PAPER NUMBER
2153	

DATE MAILED: 01/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/631,251	WURCH ET AL.	
	Examiner	Art Unit	
	Yasin M. Barqadle	2153	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 October 2005*.

2a)☐ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *5,6,8-14,17-20,23 and 27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *5,6,8-14,17-20,23 and 27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 17, 2005 has been entered.

Response to Amendment

The amendment filed on October 17, 2005 has been fully considered but are not persuasive.

Response to arguments

In response to Applicant's argument in page 10 that Vepa describes a filter that masks part of the Mac address so that the receiving NIC will not reject a data packet that has a MAC address different than the receiving NIC and does not actually change the address used to that of the current NIC. Examiner notes that Vepa teaches, "The media access control (MAC) address that represents the selected NIC is inserted in the outgoing data packet. The data packet is then sent using the selected NIC" (col. 4, lines 12-15). Vepa further teaches, "The first MAC address in the outgoing data packet is replaced with a second MAC address, wherein the second MAC

address represents the selected NIC. The outgoing data packet is then transmitted using the selected NIC" col. 11, lines 1-11).

Applicant argues, "none of Vepa, Jones, or Latif, whether taken singly or in combination, teach or suggest such a process for identifying an active network adapter driver." (Page 11, third paragraph). Examiner notes that Vepa teaches "In order for a switch to learn to forward NIC 108b data packets to NIC 108a, keep-alive data packets with a source address of both NICs 108a and 108b are transmitted periodically." Col. 7, lines 60-63). Vepa further teaches "The fault tolerance scheme is used to determine whether the NIC selected in step 730 is functioning. The fault tolerance module monitors the NICs and maintains a list of MAC addresses for NICs that are active. The fault tolerance module dynamically adds and removes MAC addresses from the list depending on the status of each NIC. When the selected NIC is found to be disabled (e.g., it is not on the list), a different NIC is substituted from the list." (col. 13 , lines 31-36) "In step 820, the fault tolerance module in the present embodiment determines whether the incoming data packet is a "keep-alive" data packet. Data packets are typically sent to determine whether the connection between a client computer system and the server computer system is still active. Also, data packets may also be sent to and from the various NICs as a means for determining whether a NIC is active." Col. 14, lines 22-28).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted

> on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 27 is rejected under 35 U.S.C. 102(e) as being anticipated by Vepa et al. (U.S. Patent Number 6,490,632, hereinafter "Vepa"). Vepa discloses high performance load balancing and fail over support of Internet protocol exchange traffic over multiple network interface cards.

In referring to claims 27, Vepa discloses,

- Determining an active network adapter by monitoring packet traffic and hardware status of one or more network adapters:
  Vepa, col. 13, 32-34 (see full quote above)
- Receiving a plurality of data packets from at least one application:
  Vepa, Figure 3B shows outgoing data packet 215, from an application
- Dynamically engaging the active network adapter by a NAA disposed between a data link layer and a network layer to process at least some of the data packets, wherein the engagement of the network adapter is transparent to the application if the application is disposed in L3 or higher:
  Vepa, Figure 4 shows the NAA (elements **330** and **335**) is disposed between the link and network layers. Application layer **310** is shown to be disposed above the network layer (L3). Vepa, Figure 3A shows NIC **108B** is dynamically engaged.
- Changing a hardware destination address of an incoming data packet to a data link layer (2) address of the primary network adapter prior to sending the data packet to the application (col.4, lines 12-15 and col. 11, lines 1-11); and changing a source hardware address of an incoming data packet to a data link layer (2) address of the active adapter (col. 11, lines 1-11 and col. 12, lines 6-34)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 5-6,8, 10-14, 17-20, and 23 are rejected under 35 U.S.C. 103(a) as being anticipated by Vepa in view of Jones (U.S. Patent Number 6,064,649, hereinafter "Jones").

In referring to claim **5**, Vepa shows substantial features of the claimed invention including:

- Determining an active network adapter (commonly referred to as a Network Interface Card or NIC) by monitoring packet traffic and hardware status of one or more network adapters:

  "The fault tolerance module dynamically adds and removes MAC addresses from the list depending on the status of each NIC", column 14, lines 22-28, "In step 820, the fault tolerance module in the present embodiment determines whether the incoming data packet is a 'keep-alive' data packet. Data packets are typically sent to determine whether the connection between a client computer system and the server computer system is still active. Also, data packets may also be sent to and from the various NICs as a means for determining whether a NIC is active." (Vepa, col. 13, 32-34)
- The engagement of the active network adapter is invisible to the active network application:

  Vepa, Figure 4 shows the Application Layer **310** only communicates with the Network Layer **320**, the layers below the Network Layer **320** are invisible to Application Layer **310**
- The NAA defines a virtual anchor adapter driver that is known as the only adapter driver:

  Vepa, Figure 4 shows the Dynamic Access Software Element **330** and Load Balancing Scheme **335** act as a NAA for computer system **190**, from the figure it can be seen that

the Network Layer **320** is connected to the Load Balancing Scheme **335** and cannot see the plurality of NIC drivers, **340a-340d**

- Assigning a predetermined network adapter as a primary network adapter:

  It is inherent in a fault tolerance system to have first or primary NIC, to be used initially: claim 1 of Vepa, *"executing a load balancing scheme to specify a first NIC from said plurality of NICs"*

  Changing a source hardware address of an outgoing data packet to a data link layer address of the active network adapter; (col.4, lines 12-15 and col. 11, lines 1-11); and modifying a destination hardware address of an incoming data packet to that of the primary network adapter driver prior to sending the data packet to the network application (col. 11, lines 1-11 and col. 12, lines 6-34)

However, Vepa does not explicitly show the network adapters are based on different access technologies. Nonetheless this feature is well known in the art and would have been an obvious modification to the system disclosed by Vepa as evidenced by Jones

In analogous art, Jones discloses an automatic media apparatus and method. Jones, Fig. 4 shows a computer 70 with both wireless hardware 56 and wired hardware 52. Jones, Fig. 2 shows that the data link layers for the 2 different networks access technologies are different. The data link layer for the first (wired) access technology consists of sub-layer 44 and 50, whereas the data link layer for the second (wireless) access technology consists of Sub-layers 44, 58 and 54.

Given these teachings, a person of ordinary skill in the art would have readily recognized the desirability and advantages of modifying the system of Vepa so as to use different access technologies for one or more of the NICs, such as taught by Jones, in order to provide load balancing and fault tolerance for networks that allow connections via multiple network access technologies.

In referring to claim 6, Vepa in view of Jones discloses,

- Initially setting the virtual anchor adaptor driver as the network adapter driver associated with the primary adapter:

It is inherent in a fault tolerance system to associate the adapter with the first or primary NIC

In referring to claim 7, Vepa in view of Jones discloses,

- Changing the hardware source address of outgoing data packets to that of the active network adapter:
  "The media access control (MAC) address that represents the selected NIC is inserted in the outgoing data packet" (Vepa, col. 4, lines 12-14)
- Changing the hardware destination address of incoming data packets to that of the primary network adapter:
  "a filter that is adapted to mask a portion of a MAC address in an incoming data packet received at a NIC such that the MAC address the incoming data packet is equivalent to the MAC address representing the NIC " (Vepa, col. 4, lines 48-51)

In referring to claim 8 and 10, Vepa in view of Jones discloses,

- Receiving information from a network adapter about connection or disconnection status:
  "The fault tolerance module dynamically adds and removes MAC addresses from the list depending on the status of each NIC" (Vepa, col. 13, 32-34)

In referring to claim 11, Vepa shows substantial features of the claimed invention including:

- Utilizing the first network access technology for executing the active network application:
  It is inherent in a fault tolerance system to have first or primary NIC, to be used initially: claim 1 of Vepa, *"executing a load balancing scheme to specify a first NIC from said plurality of NICs"*
- Selecting the second network access technology for continuing the active network application without interrupting the network application through a network access

arbitrator by arbitrating between the first network adapter driver and the second network adapter driver for sending and receiving information:

By definition a fault tolerance and fail over support scheme is designed to allow the switching from one network interface to another without interrupting the active network application: Vepa claim 2, *"automatically switching from said first NIC to a second NIC when said fault tolerance scheme indicates said first NIC is not available"*

However, Vepa does not explicitly show the network adapters are based on different access technologies. Nonetheless this feature is well known in the art and would have been an obvious modification to the system disclosed by Vepa as evidenced by Jones

In analogous art, Jones discloses an automatic media apparatus and method. Jones, Fig. 4 shows a computer 70 with both wireless hardware 56 and wired hardware 52. Jones, Fig. 2 shows that the data link layers for the 2 different networks access technologies are different. The data link layer for the first (wired) access technology consists of sub-layer 44 and 50, whereas the data link layer for the second (wireless) access technology consists of Sub-layers 44, 58 and 54.

Given these teachings, a person of ordinary skill in the art would have readily recognized the desirability and advantages of modifying the system of Vepa so as to use different access technologies for one or more of the NICs, such as taught by Jones, in order to provide load balancing and fault tolerance for networks that allow connections via multiple network access technologies.

In referring to claim 12, Vepa in view of Jones discloses,

- The NAA defines a virtual anchor adapter driver that is known as the only adapter driver: Vepa, Figure 4 shows the Dynamic Access Software Element **330** and Load Balancing Scheme **335** act as a NAA for computer system **190**, from the figure it can be seen that the Network Layer **320** is connected to the Load Balancing Scheme **335** and cannot see the plurality of NIC drivers, **340a-340d**

In referring to claim 13, Vepa in view of Jones discloses,

- Assigning a predetermined network adapter as a primary network adapter:
  It is inherent in a fault tolerance system to have first or primary NIC, to be used initially: claim 1 of Vepa, *"executing a load balancing scheme to specify a first NIC from said plurality of NICs"*
- Initially setting the virtual anchor adaptor driver as the network adapter driver associated with the primary adapter:
  It is inherent in a fault tolerance system to associate the adapter with the first or primary NIC

In referring to claim 14, Vepa discloses,

- Detecting when the second network adapter driver is active:
  Vepa, col. 13, 32-34 (see full quote above)
- Changing the hardware source address of outgoing data packets to that of the active network adapter:
  Vepa, col. 4, lines 12-14 (see full quote above)
- Changing the hardware destination address of incoming data packets to that of the primary network adapter:
  Vepa, col. 4, lines 48-51 (see full quote above)

In referring to claim 17 and 23, Vepa shows substantial features of the claimed invention including:

- Determining an active network adapter (commonly referred to as a Network Interface Card or NIC) by monitoring packet traffic and hardware status of one or more network adapters:
  Vepa, col. 13, 32-34)
- The NAA defines a virtual anchor adapter driver that is known as the only adapter driver:
  Vepa, Figure 4 shows the Dynamic Access Software Element **330** and Load Balancing Scheme **335** act as a NAA for computer system **190**, from the figure it can be seen that

the Network Layer **320** is connected to the Load Balancing Scheme **335** and cannot see the plurality of NIC drivers, **340a-340d**

- Assigning a predetermined network adapter as a primary network adapter:
  It is inherent in a fault tolerance system to have first or primary NIC, to be used initially: claim 1 of Vepa, *"executing a load balancing scheme to specify a first NIC from said plurality of NICs"*
- Selecting the second network access technology for continuing the active network application without interrupting the network application through a network access arbitrator by arbitrating between the first network adapter driver and the second network adapter driver for sending and receiving information:
  By definition a fault tolerance and fail over support scheme is designed to allow the switching from one network interface to another without interrupting the active network application: Vepa claim 2, *"automatically switching from said first NIC to a second NIC when said fault tolerance scheme indicates said first NIC is not available"*

However, Vepa does not explicitly show the network adapters are based on different access technologies. Nonetheless this feature is well known in the art and would have been an obvious modification to the system disclosed by Vepa as evidenced by Jones

In analogous art, Jones discloses an automatic media apparatus and method. Jones, Fig. 4 shows a computer 70 with both wireless hardware 56 and wired hardware 52. Jones, Fig. 2 shows that the data link layers for the 2 different networks access technologies are different. The data link layer for the first (wired) access technology consists of sub-layer 44 and 50, whereas the data link layer for the second (wireless) access technology consists of Sub-layers 44, 58 and 54.

Given these teachings, a person of ordinary skill in the art would have readily recognized the desirability and advantages of modifying the system of Vepa so as to use different access technologies for one or more of the NICs, such as taught by Jones, in order to provide load balancing and fault tolerance for networks that allow connections via multiple network access technologies.

In referring to claim 18, Vepa in view of Jones discloses,

- Initially setting the virtual anchor adaptor driver as the network adapter driver associated with the primary adapter:

  It is inherent in a fault tolerance system to associate the adapter with the first or primary NIC

In referring to claim 19, Vepa d in view of Jones discloses,

- Changing the hardware source address of outgoing data packets to that of the active network adapter:

  Vepa, col. 4, lines 12-14 (see full quote above)
- Changing the hardware destination address of incoming data packets to that of the primary network adapter:

  Vepa, col. 4, lines 48-51 (see full quote above)

In referring to claim 20, Vepa in view of Jones discloses,

- Receiving information from a network adapter about connection or disconnection status:

Vepa, col. 13, 32-34 (see full quote above)

In referring to claim 25, Vepa in view of Jones discloses,

- Assigning a predetermined network adapter as a primary network adapter:

  It is inherent in a fault tolerance system to have first or primary NIC, to be used initially: claim 1 of Vepa, *"executing a load balancing scheme to specify a first NIC from said plurality of NICs"*
- Initially setting the virtual anchor adaptor driver as the network adapter driver associated with the primary adapter:

  It is inherent in a fault tolerance system to associate the adapter with the first or primary NIC

In referring to claim 26, Vepa in view of Jones discloses,

- Changing the hardware source address of outgoing data packets to that of the active network adapter:
  Vepa, col. 4, lines 12-14 (see full quote above)
- Changing the hardware destination address of incoming data packets to that of the primary network adapter:
  Vepa, col. 4, lines 48-51 (see full quote above)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over in view of Jones and in further in view of Latif et al. (U.S. Patent Number 6,393,483, hereinafter "Latif").

In referring to claims 9, although Vepa in view of Jones shows substantial features of the claimed invention, Vepa in view of Jones does not show the step of providing a timer to trigger a timed event, and determining whether at least one adapter receives or sends packets during two consecutive timed events, to determine if the adapter is active. Nonetheless this feature is well known in the art and would have been an obvious addition to the system disclosed by Vepa in view of Jones as evidenced by Latif.

In analogous art, Latif discloses a method and apparatus for network interface card load balancing and port aggregation. Latif shows determining if a port on a NIC is active using timed events: *"When the link check timer routine is performed again after the predetermined timeout, the smart NIC driver 126 will proceed to decision operation 1004 where it will be determined that the primary Rx port P1 is again active as shown in Table D below. As such, the primary Rx port will be once again designated as the receiver as described in operation 1014, after it is*

determined that the primary Rx port was not the receiver in operation 1010, and shown in Table C above" (Latif, col. 15, lines 31-39)

Given these teachings, a person of ordinary skill in the art would have readily recognized the desirability and advantages of modifying the fault tolerance scheme of Vepa in view of Jones so as to use timeouts, such as taught by Latif, in order to check if a NIC is active.

Conclusion

The prior made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yasin Barqadle whose telephone number is 571-272-3947. The examiner can normally be reached on 9:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Burgess can be reached on 571-272-3949. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 703-746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Information regarding the status of an application may be obtained form the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either private PAIR or public PAIR system. Status information for unpublished applications is available through private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

YB

Art Unit 2153

KRISNA LIM
PRIMARY EXAMINER